REMARKS

INTRODUCTION:

In accordance with the foregoing, claims 3, 4, and 5 have been canceled without prejudice or disclaimer, claim 1 has been amended, and new claim 18 has been added. No new matter is being presented, and approval and entry are respectfully requested.

Claims 1-2, 6-12, 13 and 18 are under consideration, and claims 14-17 are withdrawn. Reconsideration is respectfully requested.

REJECTION UNDER 35 U.S.C. §103:

In the Office Action, at pages 2-3, numbered paragraph 4, claims 1-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Matsui (USPN 6,331,371; hereafter, Matsui) in view of Itoh (USPN 5,031,623; hereafter, Itoh) and Takesue (USPN 5,721,082; hereafter, Takesue). The reasons for the rejection are set forth in the Office Action and therefore not repeated. The rejection is traversed and reconsideration is requested.

Claims 3, 4, and 5 have been cancelled without prejudice or disclaimer.

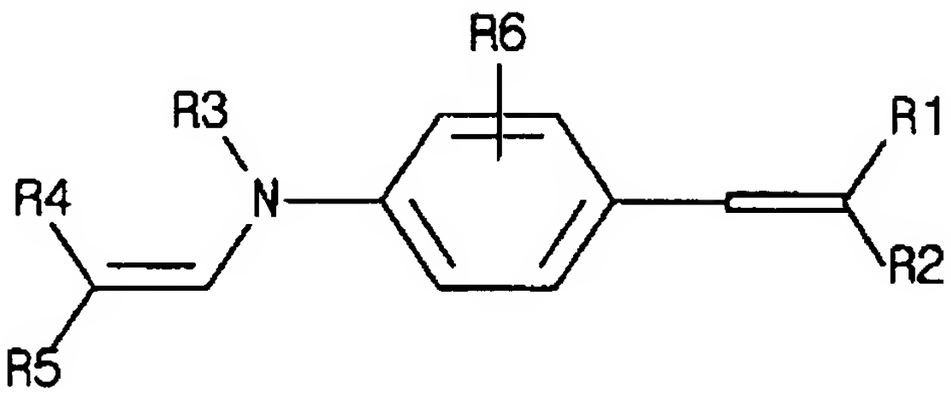
First, it may be helpful to note that light emission from organic materials relies on electrons and "holes" combining to form excited states, called "excitons," that subsequently emit photons when they decay. A plurality of organic layers comprise the organic photoconductor (see specification). When an appropriate voltage is applied to the organic photoconductor, the injected holes and electrons combine in an emissive layer, emitting photons. Generally, the structure of the organic layers and the choice of the anode and the cathode are designed to maximize the recombination process in the emissive layer, thus maximizing the light output from the structure.

In the present invention, the multi-layered electrophotographic positively charged organic photoconductor includes a conductive substrate, a charge transport layer formed on the conductive substrate, and a charge generating layer formed on the charge transport layer. Independent claim 1 has been amended to recite that the composition to form the charge transport layer includes a mixture of two hole transport materials (see amended claim 1, which is supported by paragraphs [0033] on pages 8-10 and [0051] on pages 19-20 of the specification), a binder resin and an organic solvent. In the present invention, the organic photoconductor controls interfacial conditions of the charge transport layer and the charge generating layer, to optimize sensitivity and minimize a discharge voltage (see Abstract).

The Examiner admits that Matsui does not teach the specific charge transport and charge generating materials of claim 1 of the present claimed invention.

However, Itoh does not recite a mixture of a stilbene compound having a structure of the following formula (I):

(I)



in which, R1 and R2 are independently selected from the group consisting of a hydrogen atom, an alkyl group, an aryl group, and a styryl group, provided that at least one of R1 and R2 is selected from an aryl group and styryl group;

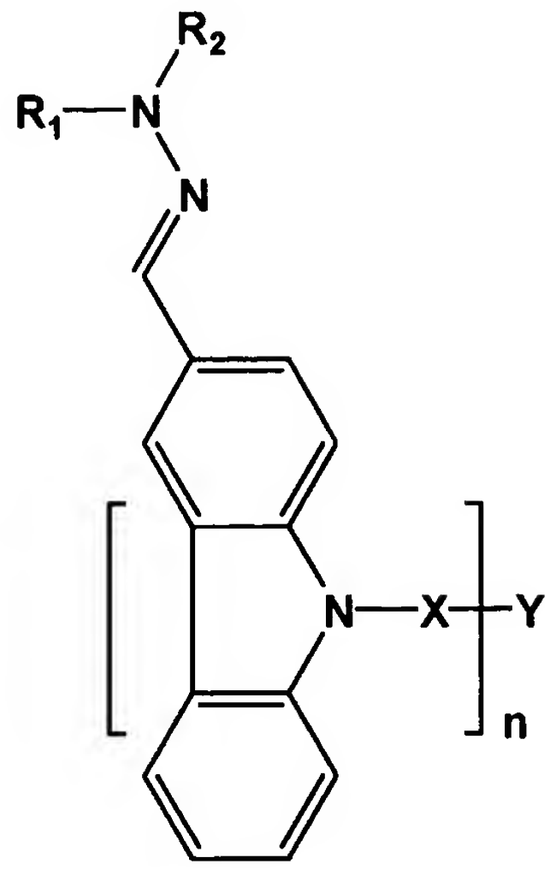
R3 is selected from the group consisting of a substituted or unsubstituted alkyl group, an aralkyl group and an aryl group;

R4 and R5 independently selected from the group consisting of a hydrogen atom and an alkyl group; and

R6 is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group and an alkoxy group; and

a hydrazone compound having a structure of the following formula (II):

(II)



in which, n is an integer from 2 to 6;

R_1 and R_2 are independently selected from among an alkyl group, a cycloalkyl group, and an aryl group and optionally combined with the nitrogen atom to form a ring;

Y is selected from among a bond, a carbon atom, a $-CR_3$ group where R_3 is a hydrogen atom or an alkyl group or an aryl group, an aryl group, a cycloalkyl group, and a cyclosiloxyl group; and

X is a linking group of the formula of $-(CH_2)_m-$ where m is an integer from 4 to 10 and at least one methylene group is optionally substituted with an oxygen atom, a carbonyl group, or an ester group,

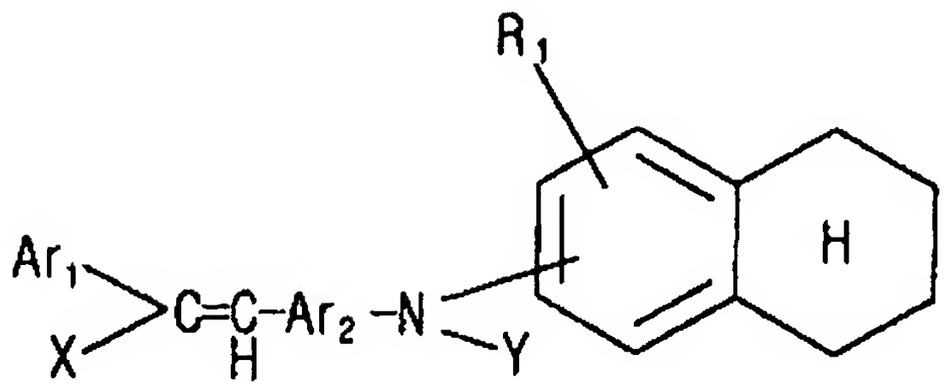
to control interfacial conditions of the charge transport layer and the charge generating layer, and to provide optimized sensitivity and a minimized discharge voltage,

as is recited in amended claim 1 of the present invention.

Hence, Itoh does not teach or suggest amended claim 1 of the present claimed invention.

Takesue relates to a photosensitive layer containing at last one amine compound having a structure of the following formula (III):

(III)



in which, Ar_1 is a substituted or unsubstituted aryl group;

Ar_2 is selected from the group consisting of a substituted or unsubstituted phenylene group, a substituted or unsubstituted naphthylene group, a substituted or unsubstituted biphenylene group, and a substituted or unsubstituted anthrylene group;

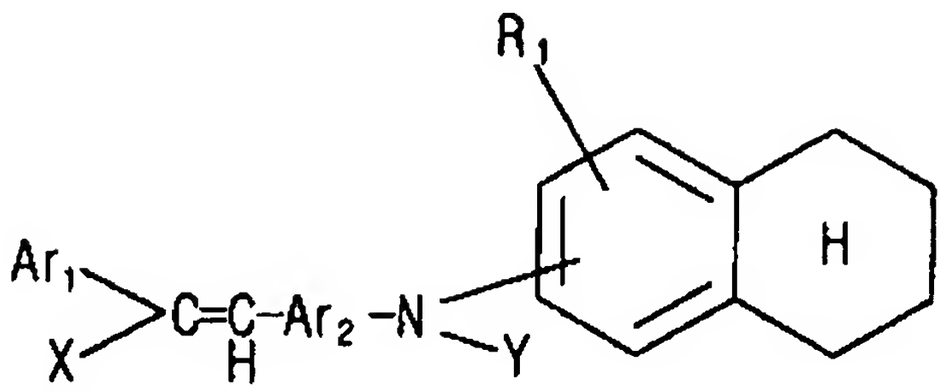
R_1 is selected from the group consisting of a hydrogen atom, a low alkyl group and a low alkoxy group;

X is selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group and a substituted or unsubstituted aryl group; and

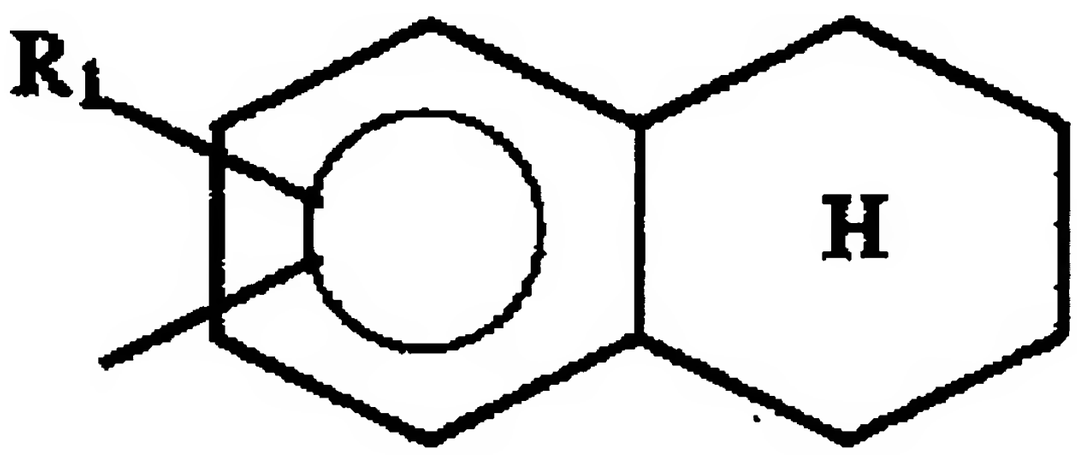
Y is a substituted or unsubstituted aryl group, or a group represented by formula (2) or (3) described in the specification. Takesue recites, however, at col. 16, lines 31-44: "The **photoreceptor** shown in FIG. 2 **comprises** a conductive support 1 and formed thereon a photosensitive layer 21 comprising **a charge-transporting medium 3 comprising the amine compound** and a binder resin and a charge generation material 4 dispersed in a charge-transporting medium 3. In this photoreceptor, the charge generation material generates charges upon light absorption and the charges are transported by the charge-transporting medium. It is desirable that the **charge transporting material** does not absorb the light which the charge generation material absorbs to generate charges. **The amine compound shows little light absorption** in the visible wavelength region, and therefore satisfies the condition that its absorption wavelength region does not overlap with that of a charge generation material" (emphasis added).

Also, in claim 1, Takesue recites:

> 1. An electrophotographic photoreceptor having a photosensitive layer containing a sensitizing dye or charge generation material, a binder resin and at least one amine compound represented by formula (1):



wherein Ar_1 represents a substituted or unsubstituted aryl group, Ar_2 represents a substituted or unsubstituted phenylene group, a substituted or unsubstituted naphthylene group, a substituted or unsubstituted biphenylene group or a substituted or unsubstituted anthrylene group, R_1 represents a hydrogen atom, a lower alkyl group or lower alkoxy group, X represents a hydrogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group, Y represents a substituted or unsubstituted aryl group a substituent being selected from the group consisting of lower alkyl groups having 1-4 carbon atoms, lower alkoxy groups having 1-4 carbon atoms, cycloalkyl groups having 5-6 carbon atoms, a benzyl group, a phenyl group, halogen, lower alkyl groups having 1-4 carbon atoms substituted with a lower alkoxy group having 1-4 carbon atoms or a halogen, lower alkoxy groups having 1-4 carbon atoms substituted with a lower alkoxy group having 1-4 carbon atoms or a halogen, benzyl groups substituted with a lower alkyl group having 1-4 carbon atoms, a lower alkoxy group having 1-4 carbon atoms or a halogen, and phenyl groups substituted with a lower alkyl group having 1-4 carbon atoms, a lower alkoxy group having 1-4 carbon atoms or a halogen, or a group represented by formula (2):

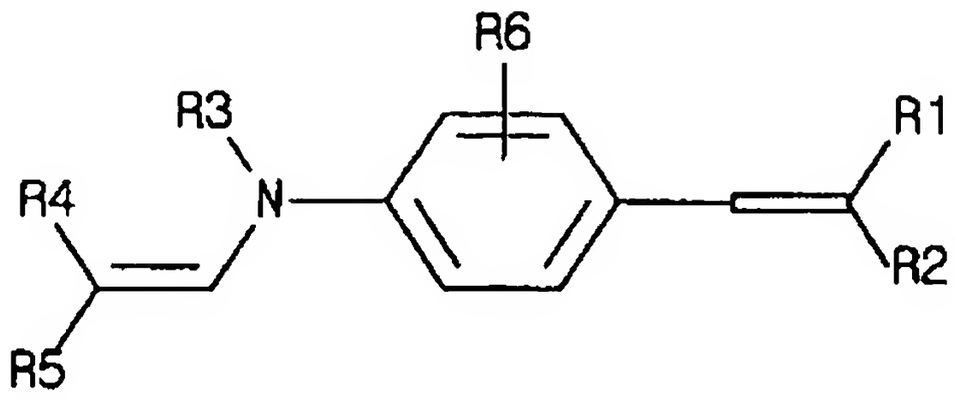


wherein R_1 is as defined above.

Hence, Takesue recites utilizing the above-cited amine compound as the charge transport compound, in contrast to amended claim 1 of the present invention, which recites that the hole transport material in the composition that forms the charge transport layer comprises a mixture of the following compounds:

a stilbene compound having a structure of the following formula (I):

(I)



in which, R1 and R2 are independently selected from the group consisting of a hydrogen atom, an alkyl group, an aryl group, and a styryl group, provided that at least one of R1 and R2 is selected from an aryl group and styryl group;

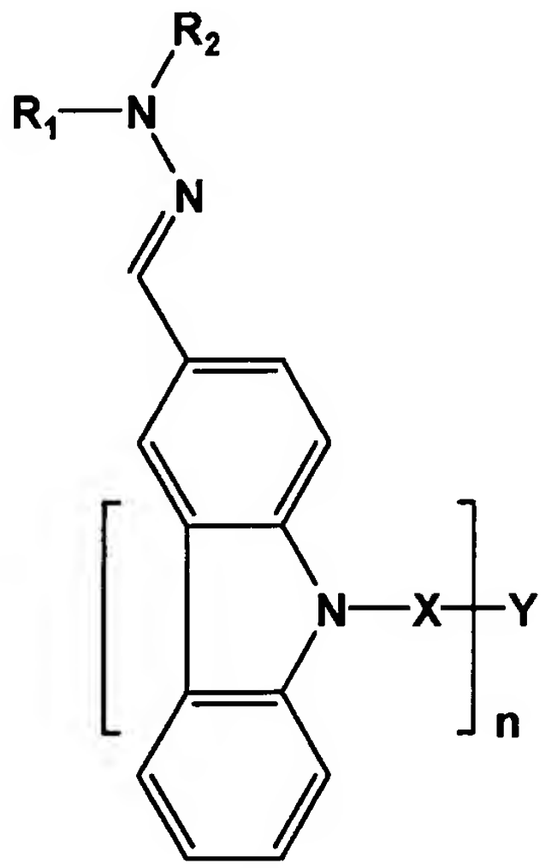
R3 is selected from the group consisting of a substituted or unsubstituted alkyl group, an aralkyl group and an aryl group;

R4 and R5 independently selected from the group consisting of a hydrogen atom and an alkyl group; and

R6 is selected from the group consisting of a hydrogen atom, a halogen atom, an alkyl group and an alkoxy group; and

a hydrazone compound having a structure of the following formula (II):

(II)



in which, n is an integer from 2 to 6;

R_1 and R_2 are independently selected from among an alkyl group, a cycloalkyl group, and an aryl group and optionally combined with the nitrogen atom to form a ring;

Y is selected from among a bond, a carbon atom, a $-CR_3$ group where R_3 is a hydrogen atom or an alkyl group or an aryl group, an aryl group, a cycloalkyl group, and a cyclosiloxyl group; and

X is a linking group of the formula of $-(CH_2)_m-$ where m is an integer from 4 to 10 and at least one methylene group is optionally substituted with an oxygen atom, a carbonyl group, or an ester group.

Hence, Takesue teaches away from independent claim 1 of the present invention.

Hence, even if combined, Matsui, Itoh and/or Takesue do not teach or suggest amended claim 1 of the present invention.

Thus, amended claim 1 is submitted to be patentable under 35 U.S.C. §103(a) over Matsui (USPN 6,331,371) in view of Itoh (USPN 5,031,623) and/or Takesue (USPN 5,721,082). Since claims 2 and 6-13 depend from amended claim 1, claims 2 and 6-13 are submitted to be patentable under 35 U.S.C. §103(a) over Matsui (USPN 6,331,371) in view of Itoh (USPN 5,031,623) and/or Takesue (USPN 5,721,082) for at least the reasons that amended claim 1 is submitted to be patentable under 35 U.S.C. §103(a) over Matsui (USPN 6,331,371) in view of Itoh (USPN 5,031,623) and/or Takesue (USPN 5,721,082).

NEW CLAIM:

New claim 18 recites that the features of the present invention include a multi-layered electrophotographic positively charged organic photoconductor comprising:

a conductive substrate;

a charge transport layer on the conductive substrate; and

a charge generating layer on the charge transport layer,

in which a first composition to form the charge transport layer comprises:

at least one hole transport material;

a binder resin; and

an organic solvent, and

a second composition to form the charge generating layer comprises:

a charge generating material;

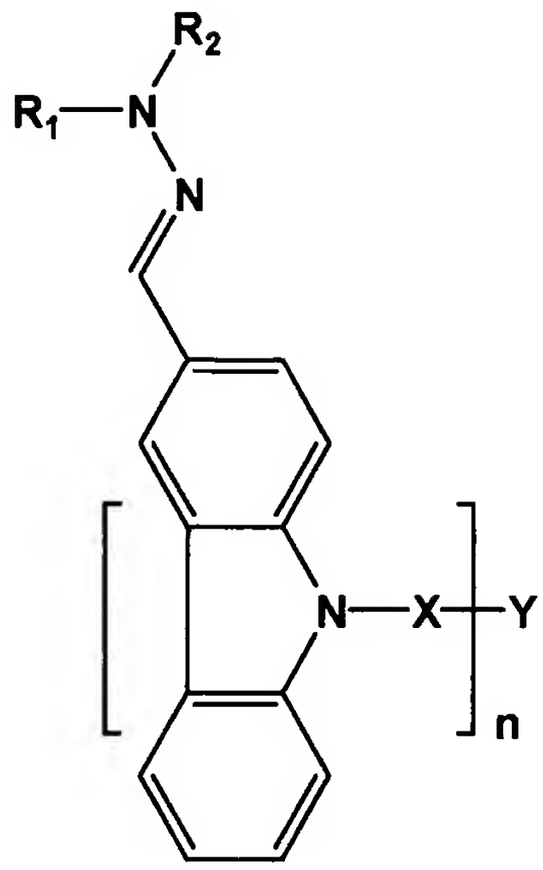
a binder resin;

an organic solvent; and

a hole transport material,

wherein the hole transport material in the composition to form the charge transport layer comprises a hydrazone compound having a structure of the following formula (II):

(II)



in which, n is an integer from 2 to 6;

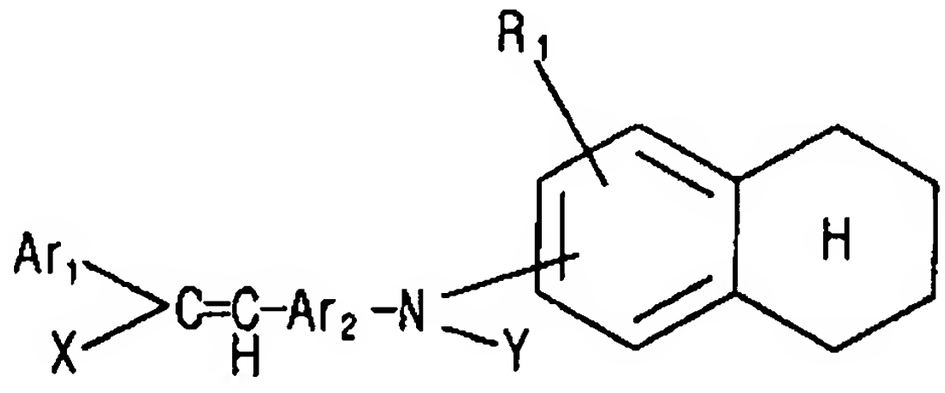
R_1 and R_2 are independently selected from among an alkyl group, a cycloalkyl group, and an aryl group and optionally combined with the nitrogen atom to form a ring;

Y is selected from among a bond, a carbon atom, a $-CR_3$ group where R_3 is a hydrogen atom or an alkyl group or an aryl group, an aryl group, a cycloalkyl group, and a cyclosiloxyl group; and

X is a linking group of the formula of $-(CH_2)_m-$ where m is an integer from 4 to 10 and at least one methylene group is optionally substituted with an oxygen atom, a carbonyl group, or an ester group,

wherein the hole transport material in the composition to form the charge generating layer is an amine compound having a structure of the following formula (III):

(III)



in which, Ar_1 is a substituted or unsubstituted aryl group;

Ar_2 is selected from the group consisting of a substituted or unsubstituted phenylene group, a substituted or unsubstituted naphthylene group, a substituted or unsubstituted biphenylene group, and a substituted or unsubstituted anthrylene group;

R_1 is selected from the group consisting of a hydrogen atom, a low alkyl group and a low alkoxy group;

X is selected from the group consisting of a hydrogen atom, a substituted or unsubstituted alkyl group and a substituted or unsubstituted aryl group; and

Y is a substituted or unsubstituted aryl group. .

Nothing in the prior art teaches or suggests this combination of using formula (II) in the charge transport layer and formula (III) in the charge generating layer. It is submitted that this new claim distinguishes over the prior art.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot, and further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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